

What is claimed is:

1. A method of optimizing equipment maintenance procedures comprising the steps of:

- analyzing the equipment;
- improving the equipment based upon the equipment analysis;
- adjusting maintenance strategies; and
- modularizing the maintenance procedures.

2. The method of claim 1, wherein the step of analyzing the equipment comprises the steps of:

- analyzing the failure modes of the equipment;
- selecting equipment using an ABC analysis technique based upon the failure modes of the equipment;
- generating component and function models for the selected equipment;
- performing a failure mode and effects analysis to generate severity, occurrence and detection classification using the component and function models;
- calculating a risk priority number for each cause of failure based upon the classification in each of the severity, occurrence and detection classifications; and
- classifying each cause of failure into damage classification based upon the severity, occurrence and detection classifications.

3. The method of claim 2, wherein the step of analyzing the failure modes of the equipment is based upon at least one of frequency of failure occurrence, time required for repairs, location, cause, the type of equipment, failure factors and the failed components of the equipment.

4. The method of claim 2, wherein the step of selecting equipment using an ABC analysis technique comprises selecting equipment which causes at least 80% of failures.

5. The method of claim 2, wherein the step of selecting equipment using an ABC analysis technique comprises selecting equipment which causes at least 80% of down time.

6. The method of claim 2, wherein the step of generating component and function models comprises breaking down each of the selected equipment into its basic components and into the basic functions of each of those basic components.

7. The method of claim 2, wherein the step of performing a failure mode and effects analysis comprises the steps of:

- identifying which component and function models;
- naming the damage to be analyzed based upon;
- indicating potential consequences of the named damage based upon;
- indicating possible causes of the named damage based upon;
- indicating current preventative measures;
- indicating current testing measures;
- classifying the named damaged according to severity;
- classifying the cause of the damage based upon the frequency of occurrence; and
- classifying the current preventative and testing measures based upon their detection potential.

8. The method of claim 2, wherein the step of classifying each cause of failure into damage classification comprises classifying each cause of failure into one of eight damage classifications.

9. The method of claim 1, wherein the step of improving the equipment based upon the equipment analysis comprises determining which of a short term measure process and a morphological method is to be applied to the results of the equipment analysis step.

10. The method of claim 9, wherein, if the determination is for a short term measure process, then the step of improving the equipment further comprises the steps of:

preparing measures to be taken for failure-prone components;
implementing the prepared measures; and
repeating the failure mode and effects analysis and damage classification.

11. The method of claim 9, wherein, if the determination is for a morphological method, then the step of improving the equipment further comprises the steps of:

defining the problem;
registering influencing parameters;
preparing alternative solutions for functions performed by the equipment;
determining evaluation criteria and their priorities;
comparing components and best practices solutions;
selecting components and combinations of solutions for entire systems;
evaluating the solutions;

12. The method of claim 9, further comprising:

performing a second failure mode and effects analysis to generate severity, occurrence and detection classification using the component and function models;
recalculating a risk priority number for each cause of failure based upon the classification in each of the severity, occurrence and detection classifications.

13. The method of claim 1, wherein the step of adjusting maintenance strategies comprises:

allocating maintenance concepts to equipment components based upon damage classifications.

14. The method of claim 1, wherein the step of modularizing the maintenance procedures comprises summarizing work from the areas of servicing, inspection and repairs into modules.

15. The method of claim 14, wherein each module is its own partial process.

16. The method of claim 14, wherein the step of modularizing the maintenance procedures comprises the steps of:

defining processes based upon existing servicing, inspection and repair work;
auditing the current processes;
analyzing the processes;
optimizing the processes;
designing inter-function processes;
standardizing the process elements; and
describing the modules.

17. The method of claim 16, wherein the servicing, inspection and repair work are set forth in regulations, guidelines and quality standards.

18. The method of claim 16, wherein the step of auditing comprises the step of:
observing duties, work processes and procedures;
recording duties, work processes and procedures; and
documenting duties, work processes and procedures.

19. The method of claim 18, wherein the documenting comprises recording process time, employee qualification, resources used and job description.

20. The method of claim 19, wherein the process time includes core time, preparation and setup time, traveling time, waiting time, personal time and idle time.

21. The method of claim 16, wherein the step of analyzing the processes comprises breaking down the process into individual steps.

22. The method of claim 16, wherein the step of optimizing the processes comprises the steps of:

improving the quality of the processes;

eliminating superfluous tasks; and
optimizing the combined work of each task.

23. The method of claim 16, wherein the step of designing inter-function processes comprises:

replacing existing job allocation with specialized functions; and
integrating corresponding processes to avoid unproductive delays.

24. The method of claim 16, wherein the step of standardizing the process elements comprises modifying ideal processes and steps and organizing the ideal processes and steps into models for transfer to other equipment.

25. The method of claim 16, wherein the step of describing the modules comprises the steps of :

providing a module number
providing a module name;
providing an exact job description;
detailing the machines and devices require for each task;
defining the module time per module unit;
determining the number of employees and the qualifications of those employees;
determining deadlines; and
determining quantity structure.